

What is claimed is:

1. A bonding composition comprising a mixture of:

- a) a melt-processable, substantially non-fluorinated polymer; and
- b) a catalyst system comprising base and crown ether.

2. The composition of claim 1 wherein the melt-processable substantially non-fluorinated polymer is selected from the group consisting of functionalized polyolefins, polyamides, polyimides, polyesters, polyurethanes, and mixtures thereof.

3. The composition of claim 1 wherein the base is a metal hydroxide, a metal aryloxide, a metal alkoxide, an organic base, or a mixture thereof.

4. The composition of claim 1 wherein the crown ether is an 18-crown-6 ether or a 15-crown-5 ether.

5. The composition of claim 2 wherein the functionalized polyolefin comprises one or more functional groups selected from the group consisting of imide, amide, oxycarbonyl, anhydride, acetate, carbonyl, and hydroxide groups.

6. The composition of claim 5 wherein the functional group is pendant from the polymer backbone.

7. The composition of claim 3 wherein the metal hydroxide base is selected from the group consisting of lithium hydroxide, potassium hydroxide, sodium hydroxide, and mixtures thereof.

8. The composition of Claim 3 wherein the metal alkoxide base is selected from the group consisting of potassium methoxide, potassium ethoxide, sodium methoxide, sodium ethoxide, potassium phenoxide, sodium phenoxide, and mixtures thereof.

9. The composition of claim 3 wherein the organic base is selected from the group consisting of potassium phthalimide and sodium trimethylsilanoate.

5 10. The composition of claim 1 further comprising an organo-onium.

11. The composition of claim 1 wherein the melt-processable substantially non-fluorinated polymer is selected from the group consisting of functionalized polyolefins, polyurethanes, polyamides, polyimides, polyesters, and combinations thereof;

10 the base is selected from the group consisting of lithium hydroxide, potassium hydroxide, sodium hydroxide, potassium methoxide, potassium ethoxide, sodium methoxide, sodium ethoxide, potassium phenoxide, sodium phenoxide, potassium phthalimide, sodium trimethylsilanoate, and mixtures thereof; and

the crown ether is an 18-crown-6 ether.

12. An article comprising:

a) a first layer comprising fluoropolymer; and

b) a second layer bonded to the first layer, the second layer comprising a mixture of:

- 20 1) a melt processable substantially non-fluorinated polymer,  
2) a base, and  
3) a crown ether.

25 13. The article of claim 12 wherein the fluoropolymer is selected from the group consisting of homopolymers of vinylidene fluoride and vinyl fluoride and copolymers or terpolymers of hexafluoropropylene and tetrafluoroethylene.

30 14. The article of claim 12 wherein the melt-processable substantially non-fluorinated polymer is selected from the group consisting of functionalized polyolefins, polyamides, polyimides, polyurethanes, polyesters, and mixtures thereof.

15. The article of claim 12 wherein the base is a metal hydroxide, a metal alkoxide, an organic base, or a mixture thereof.

16. The article of claim 12 wherein the crown ether is an 18-crown-6 ether.

17. The article of claim 14 wherein the functionalized polyolefin comprises one or more functional groups selected from the group consisting of imide, amide, oxycarbonyl, anhydride, acetate, carbonyl, and hydroxide groups.

18. The article of claim 17 wherein the functional group is pendant from the polymer backbone.

19. The article of claim 15 wherein the metal hydroxide base is selected from the group consisting of lithium hydroxide, potassium hydroxide, sodium hydroxide, and mixtures thereof.

20. The article of claim 15 wherein the metal alkoxide base is selected from the group consisting of potassium methoxide, potassium ethoxide, sodium methoxide, sodium ethoxide, potassium phenoxide, sodium phenoxide, and mixtures thereof.

21. The article of claim 15 wherein the organic base is selected from the group consisting of potassium phthalimide and sodium trimethylsilanoate.

22. The composition of claim 12 further comprising an organo-onium.

23. The article of claim 12 wherein the melt-processable substantially non-fluorinated polymer is selected from the group consisting of functionalized polyolefins, polyurethanes, polyamides, polyimides, polyesters, and combinations thereof; the base is selected from the group consisting of lithium hydroxide, potassium hydroxide, sodium hydroxide, potassium methoxide, potassium ethoxide, sodium

methoxide, sodium ethoxide, potassium phenoxide, sodium phenoxide, potassium phthalimide, sodium trimethylsilanoate, and mixtures thereof; and  
the crown ether is an 18-crown-6 ether.

5           24.    The article of claim 12 further comprising a third layer bonded to the second layer wherein said third layer comprises a polyolefin, a polyamide, a polyurethane, a polyamide, a polyester, or a combination thereof.

10           25.    The article of claim 24 wherein said article is a hose, container, or film.

15           26.    The article of claim 12 wherein the fluoropolymer is a homopolymer of vinylidene fluoride or is a copolymer or terpolymer derived from vinylidene fluoride and one or more monomers selected from vinyl fluoride, tetrafluoroethylene, and hexafluoropropylene;

            the substantially non-fluorinated polymer is selected from the group consisting of functional polyolefins, polyurethanes, polyamides, polyimides, polyesters and combinations thereof;

20           the base is selected from the group consisting of lithium hydroxide, potassium hydroxide, sodium hydroxide, potassium methoxide, sodium phenoxide, potassium phthalimide, sodium trimethylsilanoate, and mixtures thereof;

            the crown ether is an 18-crown-6 ether, and

            the third layer comprises a polyolefin, a polyamide, a polyurethane, a polyester, or a combination thereof.

25           27.    A method of bonding fluoropolymer to substantially non-fluorinated polymer comprising the steps of:

            a)    providing a bonding composition comprising a mixture of:

- 1)    melt processable substantially non-fluorinated polymer,  
                2)    a base, and  
                3)    a crown ether;

30           b)    providing fluoropolymer;

